RAW SEQUENCE LISTING

The Biotechnology Systems Branch of the Scientific and Technical Information Center (STIC) no errors detected.

Application Serial Number: _09/993,292C_

Source: _1FW16_

Date Processed by STIC: _7/15/05_

ENTERED

RAW SEQUENCE LISTING   DATE: 07/15/2005
PATENT APPLICATION: **US/09/993,292C**   TIME: 10:04:59

Input Set : **A:\09-993,292 Sequence Listing.txt**
Output Set: **N:\CRF4\07152005\I993292C.raw**

```
 3 <110> APPLICANT: University of Maryland, Baltimore
 4        GALEN, James E.
 6 <120> TITLE OF INVENTION: USE OF CLYA HEMOLYSIN FOR EXCRETION OF PROTEINS
 8 <130> FILE REFERENCE: A8461
10 <140> CURRENT APPLICATION NUMBER: 09/993,292C
11 <141> CURRENT FILING DATE: 2001-11-23
13 <150> PRIOR APPLICATION NUMBER: US 60/252,516
14 <151> PRIOR FILING DATE: 2000-11-22
16 <160> NUMBER OF SEQ ID NOS: 25
18 <170> SOFTWARE: PatentIn version 3.3
20 <210> SEQ ID NO: 1
21 <211> LENGTH: 6271
22 <212> TYPE: DNA
23 <213> ORGANISM: Artificial Sequence
25 <220> FEATURE:
26 <223> OTHER INFORMATION: pSEC84 Expression Plasmid
28 <400> SEQUENCE: 1
29 gaattctgtg gtagcacaga ataatgaaaa gtgtgtaaag aagggtaaaa aaaaccgaat      60
31 gcgaggcatc cggttgaaat aggggtaaac agacattcag aaatgaatga cggtaataaa     120
33 taaagttaat gatgatagcg ggagttattc tagttgcgag tgaaggtttt gttttgacat     180
35 tcagtgctgt caaatactta agaataagtt attgatttta accttgaatt attattgctt     240
37 gatgttaggt gcttatttcg ccattccgca ataatcttaa aaagttccct tgcatttaca     300
39 ttttgaaaca tctatagcga taaatgaaac atcttaaaag ttttagtatc atattcgtgt     360
41 tggattattc tgcatttttg gggagaatgg acttgccgac tgattaatga gggttaatca     420
43 gtatgcagtg gcataaaaaa gcaaataaag gcatataaca gatcgatctt aaacatccac     480
45 aggaggatgg gatccaaaat aaggaggaaa aaaaaatgac tagtattttt gcagaacaaa     540
47 ctgtagaggt agttaaaagc gcgatcgaaa ccgcagatgg ggcattagat ctttataaca     600
49 aataccctcga ccaggtcatc ccctggaaga cctttgatga aaccataaaa gagttaagcc     660
51 gttttaaaca ggagtactcg caggaagctt ctgttttagt tggtgatatt aaagttttgc     720
53 ttatggacag ccaggacaag tattttgaag cgacacaaac tgtttatgaa tggtgtggtg     780
55 tcgtgacgca attactctca gcgtatattt tactatttga tgaatataat gagaaaaaag     840
57 catcagccca gaaagacatt ctcattagga tattagatga tggtgtcaag aaactgaatg     900
59 aagcgcaaaa atctctcctg acaagttcac aaagtttcaa caacgcttcc ggaaaactgc     960
61 tggcattaga tagccagtta actaatgatt tttcggaaaa aagtagttat ttccagtcac    1020
63 aggtggatag aattcgtaag gaagcttatg ccggtgctgc agccggcata gtcgccggtc    1080
65 cgtttggatt aattatttcc tattctattg ctgcgggcgt gattgaaggg aaattgattc    1140
67 cagaattgaa taacaggcta aaaacagtgc aaaatttctt tactagctta tcagctacag    1200
69 tgaaacaagc gaataaagat atcgatgcgg caaaattgaa attagccact gaaatagcag    1260
71 caattgggga gataaaaacg gaaaccgaaa caaccagatt ctacgttgat tatgatgatt    1320
73 taatgctttc tttattaaaa ggagctgcaa agaaaatgat taacacctgt aatgaatacc    1380
75 aacaacgtca tggtaagaag acgcttttcg aggttcctga cgtcgctagc tgataaccta    1440
77 gggccagcaa aaggccagga accgtaaaaa ggccgcgttg ctggcgtttt tccataggct    1500
79 ccgcccccct gacgagcatc acaaaaatcg acgctcaagt cagaggtggc gaaacccgac    1560
```

RAW SEQUENCE LISTING   DATE: 07/15/2005
PATENT APPLICATION: **US/09/993,292C**   TIME: 10:04:59

Input Set : **A:\09-993,292 Sequence Listing.txt**
Output Set: **N:\CRF4\07152005\I993292C.raw**

```
 81 aggactataa agataccagg cgtttccccc tggaagctcc ctcgtgcgct ctcctgttcc  1620
 83 gaccctgccg cttaccggat acctgtccgc ctttctccct tcgggaagcg tggcgctttc  1680
 85 tcatagctca cgctgtaggt atctcagttc ggtgtaggtc gttcgctcca agctgggctg  1740
 87 tgtgcacgaa cccccccgttc agcccgaccg ctgcgcctta tccggtaact atcgtcttga  1800
 89 gtccaacccg gtaagacacg acttatcgcc actggcagca gccactggta acaggattag  1860
 91 cagagcgagg tatgtaggcg gtgctacaga gttcttgaag tggtggccta actacggcta  1920
 93 cactagaagg acagtatttg gtatctgcgc tctgctgaag ccagttacct tcggaaaaag  1980
 95 agttggtagc tcttgatccg gcaaacaaac caccgctggt agcggtggtt tttttgtttg  2040
 97 caagcagcag attacgcgca gaaaaaaagg atctcaagaa gatcctttga tctttctac  2100
 99 ggggtctgac gctcagtaga tctaaaacac taggcccaag agtttgtaga aacgcaaaaa  2160
101 ggccatccgt caggatggcc ttctgcttaa tttgatgcct ggcagtttat ggcgggcgtc  2220
103 ctgcccgcca ccctccgggc cgttgcttcg caacgttcaa atccgctccc ggcggatttg  2280
105 tcctactcag gagagcgttc accgacaaac aacagataaa acgaaaggcc cagtctttcg  2340
107 actgagcctt tcgttttatt tgatgcctgg cagttcccta ctctcgcatg gggagacccc  2400
109 acactaccat cggcgctacg gcgtttcact tctgagttcg gcatggggtc aggtgggacc  2460
111 accgcgctac tgccgccagg caaattctgt tttatcagac cgcttctgcg ttctgattta  2520
113 atctgtatca ggctgaaaat cttctctcat ccgccaaaac agccaagctg gatctggcaa  2580
115 atcgctgaat attccttttg tctccgacca tcaggcacct gagtcgctgt ctttttcgtg  2640
117 acattcagtt cgctgcgctc acggctctgg cagtgaatgg gggtaaatgg cactacaggc  2700
119 gccttttatg gattcatgca aggaaactac ccataataca agaaaagccc gtcacgggct  2760
121 tctcagggcg ttttatggcg ggtctgctat gtggtgctat ctgacttttt gctgttcagc  2820
123 agttcctgcc ctctgatttt ccagtctgac cacttcggat tatcccgtga caggtcattc  2880
125 agactggcta atgcacccag taaggcagcg gtatcatcaa caggcttacc cgtcttactg  2940
127 tcaaccggat ctaaacact agcccaacct ttcatagaag gcggcggtgg aatcgaaatc  3000
129 tcgtgatggc aggttgggcg tcgcttggtc ggtcatttcg aaccccagag tcccgctcag  3060
131 aagaactcgt caagaaggcg atagaaggcg atgcgctgcg aatcgggagc ggcgataccg  3120
133 taaagcacga ggaagcggtc agcccattcg ccgccaagct cttcagcaat atcacgggta  3180
135 gccaacgcta tgtcctgata gcggtccgcc acacccagcc ggccacagtc gatgaatcca  3240
137 gaaaagcggc cattttccac catgatattc ggcaagcagg catcgccatg ggtcacgacg  3300
139 agatcctcgc cgtcgggcat gcgcgccttg agcctggcga acagttcggc tggcgcgagc  3360
141 ccctgatgct cttcgtccag atcatcctga tcgacaagac cggcttccat ccgagtacgt  3420
143 gctcgctcga tgcgatgttt cgcttggtgg tcgaatgggc aggtagccgg atcaagcgta  3480
145 tgcagccgcc gcattgcatc agccatgatg gatactttct cggcaggagc aaggtgagat  3540
147 gacaggagat cctgccccgg cacttcgccc aatagcagcc agtcccttcc cgcttcagtg  3600
149 acaacgtcga gcacagctgc gcaaggaacg cccgtcgtgg ccagccacga tagccgcgct  3660
151 gcctcgtcct gcagttcatt cagggcaccg gacaggtcgg tcttgacaaa aagaaccggg  3720
153 cgcccctgcg ctgacagccg gaacacggcg gcatcagagc agccgattgt ctgttgtgcc  3780
155 cagtcatagc cgaatagcct ctccacccaa gcggccggag aacctgcgtg caatccatct  3840
157 tgttcaatca tgcgaaacga tcctcatcct gtctcttgat cagatcttga tcccctgcgc  3900
159 catcagatcc ttggcggcaa gaaagccatc cagtttactt tgcagggctt cccaacctta  3960
161 ccagagggcg ccccagctgg caattccggt tcgctgctag acaacatcag caaggagaaa  4020
163 ggggctaccg gcgaaccagc agccccttta taaaggcgct tcagtagtca gaccagcatc  4080
165 agtcctgaaa aggcgggcct gcgcccgcct ccaggttgct acttaccgga ttcgtaagcc  4140
167 atgaaagccg ccacctccct gtgtccgtct ctgtaacgaa tctcgcacag cgattttcgt  4200
169 gtcagataag tgaatatcaa cagtgtgaga cacacgatca acacacacca gacaagggaa  4260
171 cttcgtggta gtttcatggc cttcttctcc ttgcgcaaag cgcggtaaga ggctatcctg  4320
173 atgtggacta gacatuggga tgcctcgtgg tggttaatga aaattaactt actacggggc  4380
175 tatcttcttt ctgccacaca acacggcaac aaaccacctt cacgtcatga ggcagaaagc  4440
177 ctcaagcgcc gggcacatca tagcccatat acctgcacgc tgaccacact cactttccct  4500
```

```
179 gaaaataatc cgctcattca gaccgttcac gggaaatccg tgtgattgtt gccgcatcac   4560
181 gctgcctccc ggagtttgtc tcgagcactt ttgttacccg ccaaacaaaa cccaaaaaca   4620
183 acccataccc aacccaataa aacaccaaaa caagacaaat aatcattgat tgatggttga   4680
185 aatggggtaa acttgacaaa caaacccact taaaacccaa aacatacccca aacacacacc   4740
187 aaaaaaacac cataaggagt tttataaatg ttggtattca ttgatgacgg ttcaacaaac   4800
189 atcaaactac agtggcagga aagcgacgga acaattaaac agcacattag cccgaacagc   4860
191 ttcaaacgcg agtgggcagt ctcttttggt gataaaaagg tctttaacta cacactgaac   4920
193 ggcgaacagt attcatttga tccaatcagc ccggatgctg tagtcacaac caatatcgca   4980
195 tggcaataca gcgacgttaa tgtcgttgca gtgcatcacg ccttactgac cagtggtctg   5040
197 ccggtaagcg aagtggatat tgtttgcaca cttcctctga cagagtatta cgacagaaat   5100
199 aaccaaccca atacggaaaa tattgagcgt aagaaagcaa acttccggaa aaaaattaca   5160
201 ttaaatggcg gggatacatt cacaataaaa gatgtaaaag tcatgcctga atctataccg   5220
203 gcaggttatg aagttctaca agaactggat gagttagatt ctttattaat tatagatctc   5280
205 gggggcacca cattagatat ttctcaggta atggggaaat tatcgggggat cagtaaaata   5340
207 tacggagact catctcttgg tgtctctctg gttacatctg cagtaaaaga tgcccttttct   5400
209 cttgcgagaa caaaaggaag tagctatctt gctgacgata taatcattca cagaaaagat   5460
211 aataactatc tgaagcaacg aattaatgat gagaacaaaa tatcaatagt caccgaagca   5520
213 atgaatgaag cacttcgtaa acttgagcaa cgtgtattaa atacgctcaa tgaattttct   5580
215 ggttatactc atgttatggt tataggcggt ggcgcagaat taatatgcga tgcagtaaaa   5640
217 aaacacacac agattcgtga tgaacgtttt ttcaaaacca ataactctca atatgattta   5700
219 gttaacggta tgtatctcat aggtaattaa tgatggacaa gcgcagaacc attgccttca   5760
221 aactaaatcc agatgtaaat caaacagata aaattgtttg tgatacactg gacagtatcc   5820
223 cgcaagggga acgaagccgc cttaaccggg ccgcactgac ggcaggtctg gccttataca   5880
225 gacaagatcc ccggaccccct ttcctttat gtgagctgct gacgaaagaa accacatttt   5940
227 cagatatcgt gaatatattg agatcgctat ttccaaaaga gatggccgat tttaattctt   6000
229 caatagtcac tcaatcctct tcacaacaag agcaaaaaag tgatgaagag accaaaaaaa   6060
231 atgcgatgaa gctaataaat taattcaatt attattgagt tcccttttatc cactatcagg   6120
233 ctggataaag ggaactcaat caagttattt tcttaccagt cattacataa tcgttattat   6180
235 gaaataatcg tttgcactgt ctctgttatt caggcaattt caataaaggc acttgctcac   6240
237 gctctgtcat tttctgaaac tcttcatgct g                                  6271
240 <210> SEQ ID NO: 2
241 <211> LENGTH: 305
242 <212> TYPE: PRT
243 <213> ORGANISM: Salmonella typhi
245 <400> SEQUENCE: 2
247 Met Thr Ser Ile Phe Ala Glu Gln Thr Val Glu Val Val Lys Ser Ala
248 1               5                   10                  15
251 Ile Glu Thr Ala Asp Gly Ala Leu Asp Leu Tyr Asn Lys Tyr Leu Asp
252                 20                  25                  30
255 Gln Val Ile Pro Trp Lys Thr Phe Asp Glu Thr Ile Lys Glu Leu Ser
256             35                  40                  45
259 Arg Phe Lys Gln Glu Tyr Ser Gln Glu Ala Ser Val Leu Val Gly Asp
260         50                  55                  60
263 Ile Lys Val Leu Leu Met Asp Ser Gln Asp Lys Tyr Phe Glu Ala Thr
264 65                  70                  75                  80
267 Gln Thr Val Tyr Glu Trp Cys Gly Val Val Thr Gln Leu Leu Ser Ala
268                 85                  90                  95
271 Tyr Ile Leu Leu Phe Asp Glu Tyr Asn Glu Lys Lys Ala Ser Ala Gln
272             100                 105                 110
```

```
275 Lys Asp Ile Leu Ile Arg Ile Leu Asp Asp Gly Val Lys Lys Leu Asn
276         115             120         .         125
279 Glu Ala Gln Lys Ser Leu Leu Thr Ser Ser Gln Ser Phe Asn Asn Ala
280     130         .     135             140                 .
283 Ser Gly Lys Leu Leu Ala Leu Asp Ser Gln Leu Thr Asn Asp Phe Ser
284 145             150                 155                 160
287 Glu Lys Ser Ser Tyr Phe Gln Ser Gln Val Asp Arg Ile Arg Lys Glu
288             165                 170                 175
291 Ala Tyr Ala Gly Ala Ala Ala Gly Ile Val Ala Gly Pro Phe Gly Leu
292             180             185                 190
295 Ile Ile Ser Tyr Ser Ile Ala Ala Gly Val Ile Glu Gly Lys Leu Ile
296         195             200                 205
299 Pro Glu Leu Asn Asn Arg Leu Lys Thr Val Gln Asn Phe Phe Thr Ser
300     210             215                 220
303 Leu Ser Ala Thr Val Lys Gln Ala Asn Lys Asp Ile Asp Ala Ala Lys
304 225             230                 235                 240
307 Leu Lys Leu Ala Thr Glu Ile Ala Ala Ile Gly Glu Ile Lys Thr Glu
308             245         .     250                 255
311 Thr Glu Thr Thr Arg Phe Tyr Val Asp Tyr Asp Asp Leu Met Leu Ser
312             260     .     265         .         270
315 Leu Leu Lys Gly Ala Ala Lys Lys Met Ile Asn Thr Cys Asn Glu Tyr
316         275             280                 285
319 Gln Gln Arg His Gly Lys Lys Thr Leu Phe Glu Val Pro Asp Val Ala
320     290             295                 300
323 Ser
324 305
327 <210> SEQ ID NO: 3
328 <211> LENGTH: 102
329 <212> TYPE: DNA
330 <213> ORGANISM: Artificial Sequence
332 <220> FEATURE:
333 <223> OTHER INFORMATION: Cloning Primer
335 <400> SEQUENCE: 3
336 ggatccaaaa taaggaggaa aaaaaatga ctagtatttt tgcagaacaa actgtagagg     60
338 tagttaaaag cgcgatcgaa accgcagatg gggcattaga tc                     102
341 <210> SEQ ID NO: 4
342 <211> LENGTH: 101
343 <212> TYPE: DNA
344 <213> ORGANISM: Artificial Sequence
346 <220> FEATURE:
347 <223> OTHER INFORMATION: Cloning Primer
349 <400> SEQUENCE: 4
350 cctaggttat cagctagcga cgtcaggaac ctcgaaaagc gtcttcttac catgacgttg     60
352 ttggtattca ttacaggtgt taatcatttt ctttgcagct c                      101
355 <210> SEQ ID NO: 5
356 <211> LENGTH: 97
357 <212> TYPE: DNA
358 <213> ORGANISM: Artificial Sequence
360 <220> FEATURE:
```

```
361 <223> OTHER INFORMATION: Cloning Primer
363 <400> SEQUENCE: 5
364 cacggtaaga agacgctttt cgaggttcct gacgtcgcta gctgataacc taggtcatgt    60
366 tagacagctt atcatcgata agctttaatg cggtagt                            97
369 <210> SEQ ID NO: 6
370 <211> LENGTH: 69
371 <212> TYPE: DNA
372 <213> ORGANISM: Artificial Sequence
374 <220> FEATURE:
375 <223> OTHER INFORMATION: Cloning Primer
377 <400> SEQUENCE: 6
378 agatctacta gtgtcgacgc tagctatcag gtcgaggtgg cccggctcca tgcaccgcga    60
380 cgcaacgcg                                                           69
383 <210> SEQ ID NO: 7
384 <211> LENGTH: 60
385 <212> TYPE: DNA
386 <213> ORGANISM: Artificial Sequence
388 <220> FEATURE:
389 <223> OTHER INFORMATION: Cloning Primer
391 <400> SEQUENCE: 7
392 actagtcacc cagaaacgct ggtgaaagta aaagatgctg aagatcagtt gggtgcacga    60
395 <210> SEQ ID NO: 8
396 <211> LENGTH: 101
397 <212> TYPE: DNA
398 <213> ORGANISM: Artificial Sequence
400 <220> FEATURE:
401 <223> OTHER INFORMATION: Cloning Primer
403 <400> SEQUENCE: 8
404 cattaaaggt tatcgatgat aagctgtcaa acatgagcta gcctaggtca ttaccaatgc    60
406 ttaatcagtg aggcacctat ctcagcgatc tgtctatttc g                      101
409 <210> SEQ ID NO: 9
410 <211> LENGTH: 101
411 <212> TYPE: DNA
412 <213> ORGANISM: Artificial Sequence
414 <220> FEATURE:
415 <223> OTHER INFORMATION: Cloning Primer
417 <400> SEQUENCE: 9
418 cgaaatagac agatcgctga gataggtgcc tcactgatta agcattggta atgacctagg    60
420 ctagctcatg tttgacagct tatcatcgat aacctttaat g                      101
423 <210> SEQ ID NO: 10
424 <211> LENGTH: 71
425 <212> TYPE: DNA
426 <213> ORGANISM: Artificial Sequence
428 <220> FEATURE:
429 <223> OTHER INFORMATION: Cloning Primer
431 <400> SEQUENCE: 10
432 gcgcactagt aaagaaacga accaaaagcc atataaggaa acatacggca tttcccatat    60
434 tacacgccat g                                                        71
437 <210> SEQ ID NO: 11
```

VERIFICATION SUMMARY   DATE: 07/15/2005
PATENT APPLICATION: **US/09/993,292C**   TIME: 10:05:00

Input Set : **A:\09-993,292 Sequence Listing.txt**
Output Set: **N:\CRF4\07152005\I993292C.raw**